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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/381,899 | 12/16/1999 | JAN ANDERSSON | 097037014006 | 4564 |

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RONALD A SANDLER
JONES DAY REAVIS & POGUE
77 WEST WACKER DRIVE
CHICAGO, IL 60601-1692

EXAMINER

BIENEMAN, CHARLES A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2176

DATE MAILED: 04/17/2003

Handwritten signature/initials

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/381,899

Applicant(s)

ANDERSSON, JAN

Examiner

Charles A. Bieneman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,8-10,13-15,18-22,25-27,30-32 and 35-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,8-10,13-15,18-22,25-27,30-32 and 35-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

1. This action is responsive to the following communications: Amendment and Information Disclosure Statement, both filed on March 6, 2003.
2. Claims 1-5, 8-10, 13-15, 18-22, 25-27, 30-32, and 35-40 are pending. Claims 1, 18, and 35 are independent claims.

Claim Objections

3. **Claim 36** is objected to because of the following informalities: the examiner presumes that the phrase "key line" in line 2 should be "line key". Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. **Claims 35-40** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding **independent claim 35**, the specification would not have enabled one skilled in the art to implement the limitation in line 2 of "providing a line keys and objects database" because the specification does not refer to such a database or offer an explanation of what it is or of how line keys and objects would be stored in it.

Further, the specification would not have enabled one skilled in the art to implement the limitation of "scanning an unknown form into a data processing unit in communication with said line keys and objects database" as recited in lines 4-5. In particular, the specification does not

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explain what it means for a data processing unit to be in communication with the line keys and objects database, or what said communication comprises.

Further, the specification would not have enabled one skilled in the art to implement the limitation in lines 8-9 of “searching line keys and objects from said known forms in said line keys and objects database” because the specification does not explain how line keys and objects are associated in the database.

Regarding **dependent claim 36**, the specification would not have enabled one skilled in the art to implement the limitation of creating a line key and an object by horizontal and vertical keys because while it is clear that a line key is comprised of horizontal and vertical keys, the specification also explains (para. 25) that the line keys are “implemented on objects” which seems to contradict the notion that horizontal and vertical keys create objects, or that objects are comprised of horizontal and vertical keys.

The dependent claims not mentioned above are rejected for fully incorporating the deficiencies of their base claims.

6. **Claims 1-5, 8-10, 13-15, 18-22, 25-27, and 30-32** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 18 recite “continuing data acquisition” and “continued data acquisition” respectively. These recitations lack antecedent basis as it is not clear either from the claims nor the specification that continuing or continued data acquisition has been earlier mentioned or explained. Further, it is unclear what steps and means comprise “continuing data acquisition” and “continued data acquisition” respectively, *i.e.* it is unclear on the face of the claim what steps

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or means would embody the recited limitations of “continuing data acquisition” and “continued data acquisition”.

The dependent claims not mentioned above are rejected for fully incorporating the deficiencies of their base claims.

7. **Claims 35-40** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **independent claim 35**, there is no antecedent basis in the specification for the limitation in line 2 of “providing a line keys and objects database” because the specification does not refer to such a database or offer an explanation of what it is or of how line keys and objects would be stored in it.

Further, the specification does not provide antecedent basis for “scanning an unknown form into a data processing unit in communication with said line keys and objects database” as recited in lines 4-5. In particular, the specification does not explain what it means for a data processing unit to be in communication with the line keys and objects database, or what said communication comprises.

Further, the specification does not provide antecedent basis for the limitation in lines 8-9 of “searching line keys and objects from said known forms in said line keys and objects database” because the specification does not explain how line keys and objects are associated in the database.

Regarding **dependent claim 36**, the specification does not provide antecedent basis for and appears to contradict the limitation of creating a line key and an object by horizontal and

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vertical keys because while it is clear that a line key is comprised of horizontal and vertical keys, the specification also explains (para. 25) that the line keys are “implemented on objects” which seems to contradict the notion that horizontal and vertical keys create objects, or that objects are comprised of horizontal and vertical keys.

The dependent claims not mentioned above are rejected for fully incorporating the deficiencies of their base claims.

Claim Rejections - 35 USC § 102

8. **Claims 1 and 18** are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Number 5,815,704 to Shimotsuji et al. (“Shimotsuji”) issued on September 28, 1998, filed on January 26, 1996, cited in the Office action mailed on August 28, 2002.

Shimotsuji teaches scanning (*i.e.*, providing) an unknown form. (Shimotsuji, col. 3, lines 31-32.)

Shimotsuji further teaches generation of a form map based on designs on the unknown form for identifying information contained thereon inasmuch as the line/character data disclosed by Shimotsuji is equivalent to a form map. (Shimotsuji, col. 3, lines 44-45; see also col. 4, lines 5-48.)

Shimotsuji further teaches searching and comparing the generated form map with stored, registered maps in a map storage means. (Shimotsuji, col. 3, lines 48-50; col. 4, lines 50-54.)

Shimotsuji further teaches storage of generated form maps in the map storage means when they do not coincide with a stored map according to pre-determined limits for agreement. (Shimotsuji, col. 5, line 66 – col. 6, line 2.)

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Shimotsuji further teaches indicating agreement according to the limits for agreement when agreement is found. (Shimotsuji, col. 6, lines 50-56.)

Finally, inasmuch as “continuing data acquisition” and “continued data acquisition”, as recited in claims 1 and 18 respectively, can be understood, Shimotsuji teaches continuing data acquisition from the unknown form for identifying informational content on the unknown form inasmuch as Shimotsuji discloses a file means for storage and retrieval of document images from which form maps can be extracted. (Shimotsuji, col. 2, lines 12-41.)

Claim Rejections - 35 USC § 103

9. **Claims 1, 4-5, 8-9, 18, 21-22, and 25-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,293,429 to Pizano et al. issued March 8, 1994 (“Pizano”) in view of U.S. Patent Number 5,434,933 to Karnin et al. issued July 18, 1995 (“Karnin”).

Regarding **independent claims 1 and 18**, Pizano teaches scanning (*i.e.*, providing) an unknown form.. (Pizano, col. 2, lines 64-66; Fig. 1.)

Pizano further teaches generation of a form map based on designs on the unknown form for identifying information contained thereon inasmuch as Pizano’s feature extraction is equivalent to the generation of a form map. (Pizano, col. 2, lines 64-66; Fig. 1)

Pizano further teaches searching and comparing the generated form map with stored, registered maps in a map storage means. (Pizano, col. 4, lines 58-67.)

Pizano does not explicitly teach storage of generated form maps in the map storage means when they do not coincide with a stored map according to pre-determined limits for agreement.. However, Karnin teaches the storage of image signatures, which are analogous to

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form maps, as new templates when the image does not match any previously stored template. (Karnin, col. 8, lines 36-38.) One of ordinary skill in the art would have recognized that one might want to be able to match new forms in the future. Therefore, in view of Karnin's teaching it would have been obvious to modify Pizano to store non-coinciding form maps.

Pizano further teaches indicating agreement according to the limits for agreement when agreement is found inasmuch as Pizano discloses form identification as output when a match is achieved. (Pizano, col. 2, line 67 – col.3, line 2.)

Finally, inasmuch as “continuing data acquisition” and “continued data acquisition”, as recited in claims 1 and 18 respectively, can be understood, Pizano teaches continuing data acquisition from the unknown form for identifying informational content on the unknown form inasmuch as Pizano discloses storage of a form dictionary of template features. (Pizano, col. 2, lines 62-63.)

Regarding **dependent claims 4 and 21**, Pizano discloses “the use of horizontal and vertical lines as features for identifying a form.” (Pizano, col. 3, lines 5-6; Figs. 5 and 6.)

Regarding **dependent claims 5 and 22**, Pizano discloses generating horizontal and vertical keys by dividing the unknown form into a pre-determined number of horizontal and vertical segments along x and y axes, respectively, wherein each segment is equivalent to one horizontal or vertical key position. (Pizano, col. 6, lines 35-51; Fig 5.)

Regarding **dependent claims 8 and 25**, Pizano discloses horizontal and vertical keys constituting line keys used in the searching and comparison step inasmuch as Pizano teaches the comparison of line key patterns during this step. (Pizano, col. 6, lines 36-40; Fig. 5.)

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Regarding **dependent claims 9 and 26**, Pizano does not teach but it would have been obvious to one of ordinary skill in the art to modify Pizano to sort regions (*i.e.*, line keys) in the storage means according to the number of markings inasmuch as it would have been obvious to extend Pizano's method of assigning one or no tags to a region (Pizano, col. 6, lines 55-59) to a method that assigns a plurality of tags to a region because one of ordinary skill would have recognized that this would have provided more information for the comparison step.

10. **Claims 2-3, 10, 13-14, 19-20, 27, and 30-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pizano and Karnin as applied to claims 1 and 18 above, and further in view of U.S. Patent Number 4,933,979 to Suzuki, issued June 12, 1990 ("Suzuki").

Regarding **independent claims 2 and 19**, neither Pizano nor Karnin teach the generated form map including an object area list with objects contained in the unknown form. Suzuki, however, teaches the storage of information sets for a set of reading areas, which are analogous to object area lists inasmuch as reading areas identify parts of a form and can contain objects such as text or images (Suzuki, col. 6, lines 1-3, 39-46), and provide the benefit of efficient and accurate form recognition. ((Suzuki, col. 17, lines 42-57.) Thus, it would have been obvious to one of ordinary skill in the art to modify the combination of Pizano and Karnin to use an object area list.

Regarding **independent claims 3 and 20**, Suzuki teaches both the recognition of characters (Suzuki, col. 6, line 66 – col. 8 line 5) and the recognition of different gradations of tones (Suzuki, col. 8, lines 15-44). One of ordinary skill in the art would have recognized that these features provided the benefit of recognizing more and more complex forms. Thus, it would

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have been obvious to one of ordinary skill in the art to modify the combination of Pizano and Karnin to include text and colors as objects.

Regarding **dependent claims 10 and 27**, Pizano does not teach the application of horizontal and vertical keys to objects in the object area list. However, in view of Suzuki's use of object area lists, noted above, it would have been obvious to one of ordinary skill in the art to extend the application of Pizano's use of horizontal and vertical keys, noted above regarding dependent claims 5-6 and 22-23, from lines to objects, because one of ordinary skill in the art would have recognized that Pizano's use of line keys in a co-ordinate system was an efficient and accurate way of locating objects.

Regarding **dependent claims 13 and 30**, Pizano does not teach the comparison of a generated object key constituted by a horizontal and/or a vertical key position with a stored object key during a search procedure. However, in view of Suzuki's use of object area lists, noted above, it would have been obvious to one of ordinary skill in the art to extend the application of Pizano's use of line keys, noted above regarding dependent claims 8 and 25, to object keys because one of ordinary skill in the art would have recognized that such an object key precisely located the position of the object on the form.

Regarding **dependent claims 14 and 31**, Pizano does not teach the sorting of object keys according to a number of markings. However, in view of Suzuki's use of object area lists, noted above, it would have been obvious to one of ordinary skill in the art to extend the obvious modification of Pizano's method to sort line keys, noted above regarding dependent claims 9 and 26, to sort object keys according to the number of markings because one of ordinary skill in

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the art would have recognized that the number of markings gave additional weight in the comparison process.

11. **Claims 15 and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pizano and Karnin as applied to claims 1 and 18 above, and further in view of U.S. Patent Number 5,642,288 to Leung et al. ("Leung") issued June 24, 1997, filed November 10, 1994.

Neither Pizano nor Karnin disclose searching resulting a pre-defined number of requested probable candidates for the currently searched form. However, Leung discloses returning a predefined number of matches to the user in the context of a document recognition and handling system. (Leung, col. 10, lines 1-18.) It would have been obvious to one of ordinary skill in the art to have modified the combination of Pizano and Karnin to include Leung's step of returning a pre-defined number of requested probable candidates for the currently searched form because one of ordinary skill in the art would have recognized that returning too many results would be confusing to the user, and that the more results returned, the less likely that some results would provide a match.

Further, Karnin teaches manual support of the registration process by an operator. (Karnin, col. 8, lines 33-35.) This limitation would have been obvious to one of ordinary skill in the art because one of ordinary skill would have recognized a need to deal with the inevitable occurrence of machine error or imprecision in the comparison process.

Response to Arguments

12. Applicant's arguments filed March 6, 2003 have been fully considered but they are not persuasive.

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Applicant's argument concerning Shimotsuji (US 5,815,704), under which claims 1 and 18 stand rejected, consists solely of the statement that Shimotsuji "specifically creates rectangles or the like for comparisons. The present invention does not do so." Applicant does not explain which limitations of claims 1 and 18 that Shimotsuji does not teach.

Regarding Pizano (US 5,293,429), applicant states that Pizano "adds the length of all lines in making comparisons. This is not done in the subject application . . ." Again, applicant does not explain which claim limitations for which Pizano has been cited that it fails to teach.

Regarding Karnin (US 5,434,933), applicant argues that it relies on "a single signature comprising a number of 'peaks' for an entire form used for comparison. The present application has form maps which are partitioned in horizontal and/or vertical line sections and marks such a section every time there is a match found with such lines in a database." Again, applicant does not explain which claim limitations for which Karnin has been cited that it fails to teach. Further, applicant does not explain why storing Karnin's image signatures is not analogous to storing form maps as stated by the examiner in the rejection of claims 1 and 18.

Regarding Suzuki (US 4,933,979), applicant argues that his claimed invention is distinguished because it "generates a form map in real time every time an unknown form is read." However, applicant fails to identify claim language supporting this argument.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

| U.S. Patent Number | Name | Issue Date | File Date | |
|--------------------|-------------|------------|-----------|--|
| 6,243,501 B1 | Jamali | 6/5/01 | 5/20/98 | |
| 6,327,387 B1 | Naoi et al. | 12/4/01 | 7/7/97 | |

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14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles A. Bieneman whose telephone number is 703-305-8045. The examiner can normally be reached on Monday - Thursday, 7:00 a.m. - 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Herndon can be reached on 703-308-5186. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

CAB

April 11, 2003


HEATHER R. HERNDON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100